What is claimed is:

1. A semiconductor device comprising:

a semiconductor substrate of a first conductivity type;

a gate electrode formed on top of the semiconductor substrate through the intermediary of a gate oxide film;

a source and drain, formed in the semiconductor substrate;

a source side impurity layer of a first conductivity type formed so as to extend from inside the source to directly underneath the gate electrode; and

a drain side impurity layer of the first conductivity type formed so as to extend from inside the drain to directly underneath the gate electrode, wherein the source side impurity layer has a portion thereof directly underneath the gate electrode, formed at a depth deeper from the surface of the semiconductor substrate than a portion thereof inside the source while the drain side impurity layer has a portion thereof directly underneath the gate electrode, formed at a depth deeper from the surface of the semiconductor substrate than a portion thereof inside the drain.

2. A semiconductor device according to claim 1, wherein the source side impurity layer and the drain side impurity layer are formed such that lower end faces of the portion of the source side impurity layer, directly underneath the gate electrode, and the portion of the drain side impurity layer, directly underneath the gate electrode, respectively, are formed at the

same depth as, or at a depth deeper than a depth of respective lower end faces of the source and drain.

3. A semiconductor device according to claim 1, wherein the source and drain have a LDD region formed in the vicinity directly underneath both sides of the gate electrode, respectively, and the source side impurity layer and the drain side impurity layer are formed in respective portions of the semiconductor substrate, directly underneath of the LDD regions.

4. A process of fabricating a semiconductor device comprising the steps of:

forming a semiconductor substrate of a first conductivity type;

forming a gate oxide film and a gate electrode on top of the semiconductor substrate;

forming a sidewall on both sides of the gate electrode;

forming a surface covering film on exposed portions of the surface of the semiconductor substrate;

forming a source and drain by introducing a dopant in the semiconductor substrate;

removing the sidewalls; and

forming a source side impurity layer and drain side impurity layer by introducing a dopant of a first conductivity in the semiconductor substrate through the intermediary of portions of the surface where the sidewalls have been removed, and the surface covering film,

wherein the source side impurity layer extends from the source side to directly underneath the gate electrode, and has a portion thereof, formed directly underneath the gate electrode at a depth deeper from the surface of the semiconductor substrate than a depth thereof, inside the source,

while the drain side impurity layer extends from the drain side to directly underneath the gate electrode, and has a portion thereof, formed directly underneath the gate electrode at a depth deeper from the surface of the semiconductor substrate than a depth thereof, inside the drain.

5. A process of fabricating a semiconductor device according to claim 4, further comprising the step of forming LDD regions of a second conductivity type, in the vicinity of the gate electrode , and in respective regions directly above the source side impurity layer and the drain side impurity layer.

6. A process of fabricating a semiconductor device according to claim 5, further comprising the step of forming sidewalls covering both sides of the gate oxide film and gate electrode, respectively, on top of the LDD regions.

7. A process of fabricating a semiconductor device according to claim 4, wherein the source side impurity layer and the drain side impurity layer are formed such that the respective portions of the source side impurity layer, and the drain side impurity layer, directly underneath the gate electrode, have a lower end at a depth equal to, or deeper than a depth

of respective lower ends of the source and drain.

8. A process of fabricating a semiconductor device according to claims 4, wherein the step of forming the source side impurity layer and drain side impurity layer is an oblique ion implantation step for forming the source side impurity layer and drain side impurity layer so as to be extended up to regions directly underneath the gate electrode, respectively.

9. A process of fabricating a semiconductor device according to claim 4, wherein the surface covering film is formed by oxidizing the surface of the semiconductor substrate.